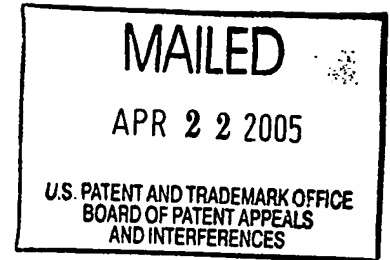


The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* TAKESHI ARAKI,  
TERUO NAKANISHI and TOSHIO UMEMURA



Appeal No. 2005-0931  
Application 10/006,679

ON BRIEF

Before WARREN, OWENS and DELMENDO, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

*Decision on Appeal*

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 and 2, all of the claims in the application.<sup>1</sup>

Claim 1 illustrates appellants' invention of a thin film magnet, and is representative of the claims on appeal:

1. A thin film magnet having a microstructure composed of crystalline phases of the Nd<sub>2</sub>Fe<sub>14</sub>B structure type, whose c-axis is oriented in a film-thickness direction, and amorphous phases, wherein each said Nd<sub>2</sub>Fe<sub>14</sub>B type crystalline phase is isolated from the others by the amorphous phase, and said film is formed by forming a R<sub>x</sub>M<sub>1-x-y</sub>B<sub>y</sub> thin film (in the formula, R is one (1) or more elements selected from the group consisting of Nd, Pr, Tb, Ho and Dy, M is one

<sup>1</sup> Claim 3 was withdrawn from consideration by the examiner under 37 CFR § 1.142(b) and cancelled by appellants subsequent to the final rejection.

(1) or more elements selected from the group consisting of Fe, Co and Ni and  $0.11 \leq x \leq 0.15$ ,  $0.12 \leq y \leq 0.20$ ) on a substrate by a physical deposition method while controlling a temperature of the front side of said substrate within a range of  $\pm 2^\circ\text{C}$ .

The reference relied on by the examiner is:

Araki et al. (Araki)

5,676,998

Oct. 14, 1997

The examiner has rejected appealed claims 1 and 2 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Araki (answer, pages 3-4).

Appellants state that the appealed claims “stand or fall together” (brief, page 3). Thus, we decide this appeal based on appealed claim 1. 37 CFR § 1.192(c)(7) (2003); *see also* 37 CFR § 41.37(c)(1)(vii) (effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief for a complete exposition thereof.

### *Opinion*

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the supported finding advanced by the examiner that as a matter of fact, *prima facie*, appealed claim 1 is anticipated by or is obvious over Araki. We add the following to the examiner’s analysis for emphasis.

It is apparent from the plain language of claim 1 taken in light of the specification, including the drawings, as it would be interpreted by one of ordinary skill in this art, *see In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989), that the same is couched in product-by-process format wherein the product is claimed in terms of the characteristics imparted by the stated process by which it is made, thus encompassing a product having such imparted characteristics even if prepared by a different process. *See generally, In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). Thus, the claimed  $R_xM_{1-x}B_y$  thin film magnet encompassed by claim 1 has each  $\text{Nd}_2\text{Fe}_{14}\text{B}$  type crystalline phase isolated from another such

phase by any manner of amorphous phase, with the c-axis of the crystalline phase oriented in a film-thickness direction, that is, oriented perpendicular to the film plane, and the film can be formed on any substrate by any physical vapor deposition method, wherein a temperature of the front side of the substrate is controlled within a range of  $\pm 2^{\circ}\text{C}$ .

In addition to the similarities between the claimed thin film magnets and those produced by a sputter deposition process in Araki with respect to the film composition and manner of preparation found by the examiner (answer, page 3), we find that Araki would have disclosed that the illustrative apparatus for preparing single as well as multiple thin film magnets can “precisely” control the power applied to the target, the gas pressure and the temperature of the substrate by appropriate controllers (e.g., col. 5, ll. 3-7, col. 10, ll. 4-6, and **FIGs. 1 and 4**), which controllers are used in appellants’ apparatus that additionally includes a thermoelectric couple on the back or front side of the substrate “to refer the temperature of the substrate” (specification, e.g., page 13, ll. 10-17, and FIG. 11). We note that the illustrative apparatus of both Araki (e.g., col. 4, ll. 57-58) and appellants (specification, page 12, l. 23, to col. col. 13, l. 1) have the substrate heater positioned behind the substrate. Araki also discloses that the deposition of thin film magnets occurs at substrate temperatures in the range of  $500^{\circ}$  to  $630^{\circ}\text{C}$ , wherein the thin film has “an  $\text{Nd}_2\text{Fe}_{14}\text{B}$ -based ferromagnetic phase as a main phase and the C-axis of the crystal is oriented perpendicular to the film plane,” with the ranges of  $510^{\circ}$  to  $590^{\circ}\text{C}$  and particularly,  $530^{\circ}$  to  $570^{\circ}\text{C}$  (col. 6, ll. 35-50, col. 13, ll. 30-31 and 33-39, col. 14, ll. 43-47 and Table 7). Araki discloses such thin film magnets as, among others, Sample 6 of Table 1 produced at  $550^{\circ}\text{C}$ , and Samples 3, 6, 9 and 12 of Table 7 illustrating  $530^{\circ}\text{C}$  and  $570^{\circ}\text{C}$ , which thin film have a composition falling within appealed claim 1. These samples involve thin films which have a composition falling within appealed claim 1. With respect to temperature of the substrate, we find in the written description in appellants’ specification the disclosure that thin film magnets similar to those of Araki cited here exhibit the required “interior structure” when heated in the range of  $520^{\circ}$  to  $560^{\circ}\text{C}$  (specification, page 20 and Table 2).

Accordingly, in view of the similarity between the thin film magnets encompassed by appealed claim 1 and disclosed by Araki in the common composition, including the composition of particular samples falling within the composition of the film stated in appealed claim 1, the

common sputter deposition method using the same type of apparatus with “precise” control of the substrate temperature in the same preferred ranges which obtains the same  $\text{Nd}_2\text{Fe}_{14}\text{B}$  type crystalline main phase and perpendicular c-axis orientation to the film plane, we agree with the examiner’s position that it reasonably appears from this substantial evidence that that claimed and Araki thin film magnets are identical or substantially identical because they are produced by the identical or substantially identical process, even though, as the examiner points out, Araki is silent with respect to the separation of the  $\text{Nd}_2\text{Fe}_{14}\text{B}$  type crystalline main phases with amorphous phases and the precise temperature range for the substrate of  $\pm 2^\circ\text{C}$ . Thus, the burden falls upon appellants to establish by effective argument and/or objective evidence that the claimed invention patentably distinguishes over Araki, whether the rejection is considered to be based on § 102(b) or § 103(a). See, *In re Spada*, 911 F.2d 705, 708-09, 15 USPQ2d 1655, 1657-58 (Fed. Cir. 1990) (“The Board held that the compositions claimed by Spada ‘appear to be identical’ to those described by Smith. While Spada criticizes the usage of the word ‘appear’, we think that it was reasonable for the PTO to infer that the polymerization by both Smith and Spada of identical monomers, employing the same or similar polymerization techniques, would produce polymers having the identical composition,” shifting the burden to appellant to show that the products are not identical); *In re Best*, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (CCPA 1977) (“Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See *In re Ludtke*, [441 F.2d 660, 169 USPQ 563 (CCPA 1971)]. Whether the rejection is based on “inherency” under 35 USC 102, on “prima facie obviousness” under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products. [Footnote and citation omitted.]”); *In re Skoner*, 517 F.2d 947, 950-51, 186 USPQ 80, 82-83 (CCPA 1975) (the description of the claimed invention in terms of certain physical characteristics not used in the reference, does not patentably distinguish the claimed invention over the reference where the examiner found that identical means were used in an attempt to achieve identical results such that the reference can be considered to inherently disclose the

claimed invention, even though the examiner could not compare the process described by appellants and disclosed in the reference).

Accordingly, since a *prima facie* case of anticipation and a *prima facie* case of obviousness has been established over Araki, we have again evaluated all of the evidence of anticipation and non-anticipation and all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants' arguments in the brief. *See generally, Spada*, 911 F.2d at 707 n.3, 15 USPQ2d at 1657 n.3; *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We agree with the examiner's finding that the arguments submitted by appellants alleging that certain disclosure in the specification and associated drawing represent the thin film magnets of Araki (brief, pages 3-4) have not been established by appellants to do so (answer, pages 5-7). Indeed, we find no mention of Araki anywhere in the written description in appellants' specification, and it is well settled that arguments not supported by evidence are entitled to little, if any, weight. *See In re Payne*, 606 F.2d 303, 315, 203 USPQ 245, 256 (CCPA 1979); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972).

Appellants submit that Araki describes "a physical deposition process for depositing a thin film magnet [that] employs a plasma" and contends that, as illustrated in specification FIG. 18, "the temperature of the front side of the substrate, which is exposed to the plasma, substantially fluctuates" even though "the temperature at the rear side of the substrate may be relatively constant," whereas if "the temperature of the front surface of the substrate is maintained essentially constant," the "thin film magnet structured produced is the structure illustrated in" specification FIG. 3 (brief, pages 4-5). The examiner contends that appellants "have not established that the 'Conventional' process in [FIG. 18] is, in fact, Araki's process," and therefore, the argument is entitled to little, if any, weight (answer, page 7).

We are of the opinion that the disclosure at page 18, ll. 4-20, of the specification would support appellants' argument if, as the examiner points out, it is established on the record that the "conventional" process reflect therein is in fact a process taught by Araki wherein the substrate temperature is not controlled. On the record as it stands on appeal, we find no disclosure of such

a “conventional” process in Araki. Indeed, the reference discloses “precise” control of substrate temperature, particularly temperature ranges and illustrative samples run at a specific temperature. Thus, appellants’ argument is entitled to little, if any, weight. *See Lindner, supra* (“[M]ere conclusory statements in the specification and affidavits are entitled to little weight when the Patent Office questions the efficacy of those statements. [Citations omitted]”);

Accordingly, on this record, we find that one skilled in the art following Araki’s directive to precisely control the temperature of the substrate would have reasonably arrived at the identical or substantial process specified in and thus, the identical or substantially identical product encompassed by appealed claim 1.

Accordingly, we have again evaluated all of the evidence of anticipation and of obviousness found in Araki the applied prior art with appellants’ countervailing evidence of and argument for non-anticipation and nonobviousness, and based thereon we and conclude that the claimed invention encompassed by appealed claims 1 and 2 would have been anticipated as a matter of fact under 35 U.S.C. § 102(b), and would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The examiner’s decision is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

*AFFIRMED*

*Paul F. Fournier*

CHARLES F. WARREN  
Administrative Patent Judge

Terry J. Owens

TERRY J. OWENS  
Administrative Patent Judge

Paulo H. Delmondo

ROMULO H. DELMENDO  
Administrative Patent Judge

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